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Hannah E Wubben* (hannah.huschikbradley@loras.edu), Department of Mathematics,
Loras College, Dubuque, IA 52001. *Nonlinear Schrodinger Equation with Combined
Nonlinearities*. Preliminary report.

We study the nonlinear Schrödinger equation with combined nonlinearities $iu_t + \partial_x^2 u + \epsilon_1 |u|^{\alpha_1} u + \epsilon_2 |u|^{\alpha_2} u = 0$ with $\alpha_1, \alpha_2 > 0$, $\epsilon_1, \epsilon_2 \in \{-1, 0, 1\}$, and $x \in \mathbb{R}$. We obtain the local well-posedness of solutions for a certain class of initial data in a weighted space, a subset of H^1 , for any positive powers of α_1, α_2 . With a quadratic phase $e^{ib|x|^2}$ and a sufficiently large positive b , we find that such solutions scatter in H^1 . We also investigate scattering and blow-up solutions numerically and show examples when one of the powers $\alpha_i \ll 1$. (Based on the joint work with G. Azcotia, O. Riaño, A. D. Rodriguez and S. Roudenko) (Received September 21, 2021)